FOREST EXCISE TAX -- ROAD SUMMARY SHEET

Region: Pacific Cascade

Timber Sale Name: Polyester Plaid

Application Number: 30-076379

Excise Tax Applicable Activities

Construction: 8,451 **linear feet**
Road to be constructed (optional and required) but not abandoned

Reconstruction: 3,725 **linear feet**
Road to be reconstructed (optional and required) but not abandoned

Abandonment: 0 **linear feet**
Abandonment of existing roads not reconstructed under the contract

Deactivation: 0 **linear feet**
Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: 0 **linear feet**
Existing road to receive maintenance work (specifically required by the contract) prior to haul

Excise Tax Exempt Activities

Temporary Optional Construction: 0 **linear feet**
Optional roads to be constructed and then abandoned

Temporary Optional Reconstruction: 0 **linear feet**
Optional roads to be reconstructed and then abandoned

New Abandonment: 569 **linear feet**
Abandonment of roads constructed or reconstructed under the contract

All parties must make their own assessment of the taxable or non-taxable status of any work performed under the timber sale contract. The Department of Revenue bears responsibility for determining forest road excise taxes. The Department of Natural Resources developed this form to help estimate the impact of forest excise taxes. However, the information provided may not precisely calculate the actual amount of taxes due. The Department of Revenue is available for consultation by calling 1.800.548.8829.

(Revised 7/04)

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

POLYESTER PLAID

ROAD PLAN

SECTION 9, 16, 17, 18, & 20, TOWNSHIP 16 NORTH, RANGE 04 WEST, W.M.
GRAYS HARBOR COUNTY

BLACK HILLS DISTRICT

AGREEMENT NO.: 30-076379

CONTRACT ADMINISTRATOR: Jim LeJeune

DATE: 06/01/2004

STAFF ENGINEER: Matthew T. Miskovic

DRAWN & COMPILED BY: Alicia Compton

SECTION 0 – SCOPE OF PROJECT

This project includes but is not limited to construction and optional construction including:

clearing;
grubbing;
right-of-way debris disposal;
excavation and/or embankment to subgrade;
landing construction;
acquisition and installation of drainage structures;
acquisition, manufacture, and application of rock;
grass seeding.

This project also includes but is not limited to reconstruction and optional reconstruction including:

brushing right-of-way;
right-of-way debris disposal;
cleaning ditches;
acquisition and installation of additional drainage structures;
grading and shaping existing road surface and turnouts;
compaction of road surface;
acquisition, manufacture, and application of rock;
grass seeding.

This project also includes but is not limited to abandonment including:

light abandonment.

SECTION 1 - GENERAL CLAUSES

1.1-1

Clauses in this plan apply to all construction, reconstruction or abandonment including landings unless otherwise noted.

1.1-2

Construction or reconstruction of the following roads is required. All roads shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.

Road	Stations	Type
E-2100	7+75 to 13+00	Reconstruction
E-2100 Reroute	0+00 to 10+70	Construction
Spur 1Z	0+00 to 1+10	Construction
Spur 3B	0+00 to 1+33	Construction
Spur 3C	0+00 to 1+58	Construction
Spur 3D	0+00 to 1+68	Construction

1.1-3

Construction or reconstruction of the following roads is not required. Roads used by the Purchaser shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.

Road	Stations	Type
E-2004	0+00 to 8+30	Reconstruction
E-2100	13+00 to 25+00	Reconstruction
E-2100 Ext.	0+00 to 13+73	Construction
E-2300	0+00 to 11+70	Reconstruction
Spur 1	0+00 to 18+46	Construction
Spur 1A	0+00 to 1+90	Construction
Spur 1B	0+00 to 4+87	Construction
Spur 1C	0+00 to 11+97	Construction
Spur 2A	0+00 to 4+37	Construction
Spur 2B	0+00 to 4+56	Construction
Spur 3A	0+00 to 7+59	Construction
Spur 3E	0+00 to 6+36	Construction

1.1-4

If the Purchaser desires a road location or design change, a revised Road Plan shall be submitted to the State for consideration.

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock, subsurface springs, saturated ground, and unstable soil.

1.1-10

Abandonment of the following roads is required. All roads shall be abandoned in accordance with this Road Plan.

Road	Stations	Type
E-2100	0+00 to 7+75	Light
Spur 1Z	0+00 to 1+10	Light
Spur 3B	0+00 to 1+33	Light
Spur 3C	0+00 to 1+58	Light
Spur 3D	0+00 to 1+68	Light

1.2-1

The construction, reconstruction or abandonment of any roads specified herein shall not be permitted between September 30 and May 1 unless authority to do so is granted, in writing, by the Contract Administrator.

1.2-2

Purchaser shall not use roads constructed or reconstructed under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1.2-6

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches, and culvert installations shall be completed and are subject to written approval by the Contract Administrator prior to rock application, and/or timber haul.

1.3-2

Hauling shall be suspended when wheel track rutting exceeds 6 inches unless Purchaser elects to correct the situation at his/her own expense. Corrective measures and continued operations are subject to written approval by the Contract Administrator.

1.4-3

Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

1.5-1

Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designated Road Maintainer) shall be performed in accordance with Forest Access Road Maintenance Specifications.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on TYPICAL SECTION SHEET.

SECTION 3 - GRUBBING

3-1

All stumps shall be removed that fall between grubbing limits shown on the TYPICAL SECTION SHEET. Those outside the grubbing limits but with undercut roots shall also be removed.

3-2

Grubbing limits are defined as the entire area between the external limits shown on the TYPICAL SECTION SHEET.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume within the grubbing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to the application of rock and/or timber haul.

4.2.3-1

Right-of-way debris shall be scattered outside the grubbing limits.

4.2.3-2

Right-of-way debris shall not be placed against standing timber.

4.3-1

On the following roads, Vegetative material including limbs up to 3 inches in diameter shall be cut and removed to 5 feet beyond the back of the ditch and 5 feet beyond the outer edge of the subgrade and to a height of 14 feet above the road surface as shown on the BRUSHING SECTION DETAIL. Vegetative material shall be cut as near flush with the ground as possible, but shall not extend more than 3 inches above the ground.

Road	Stations
E-2004	0+00 to 8+30
E-2100	7+75 to 25+00
E-2300	0+00 to 11+70

SECTION 5 - EXCAVATION

5.1-1

Roads shall be constructed or reconstructed in accordance with dimensions shown on the TYPICAL SECTION SHEET.

5.1-3

Road grade and alignment shall conform to the State's marked location. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are: 18 percent favorable and 12 percent adverse. Minimum radius curve is 60 feet.

5.1-4

Minimum extra widening on the inside of curves shall be:

5 feet extra	80 to 100 foot radius curve
7 feet extra	60 to 80 foot radius curve

5.1-5

Curve widening, where required, shall be added to the inside of curves.

5.1-7

Roads shall be constructed or reconstructed to the dimensions shown on the TYPICAL SECTION SHEET, within the tolerance listed below. Tolerance classes for each road are listed on the TYPICAL SECTION SHEET.

Tolerance Class	A	B	C
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table:

Material Type	Excavation Slope Ratio
Common Earth (on side slopes of 55%)	1:1
Common Earth (55% to 70% sideslopes)	¾:1
Common Earth (on slopes over 70%)	½:1
Fractured or loose rock	½:1
Hardpan or solid rock	¼:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table:

Material Type	Embankment Slope Ratio
Common Earth and Rounded Gravel	1½:1
Angular Rock	1¼:1
Sandy Soils	2:1

5.1-12

Organic material shall be excluded from embankment.

5.1-18

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location shall be subject to written approval of the Contract Administrator.

5.1.1-1

Waste material shall not be deposited within 50 feet of a cross drain culvert installation.

5.1.1-3

Waste material may be deposited adjacent to the road prism on side slopes up to 45 percent if the waste material is compacted and more than 100 feet away from live streams. On side slopes of 45 percent or more, all excavation shall be end hauled or pushed to designated embankment sites.

5.1.1-5

When constructing landings, waste material and embankment shall not be placed on side slopes steeper than 45%.

5.2-1

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the grubbing limits, or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

5.4-1

Silt-bearing runoff shall not be permitted to go into streams.

5.4-2

Accomplish sediment removal through silt traps, silt fences, settling ponds, or other methods as approved, in writing, by the Contract Administrator.

5.4-3.1

On the following roads, Purchaser shall furnish and evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 40 pounds per acre. The date of application is subject to approval by the Contract Administrator.

Mixture Percent by Weight	Minimum Percent Germination
50% Fescue, Red	90% Germination
25% Ryegrass, Perennial	90% Germination
15% Bentgrass	85% Germination
10% Clover, White and White Dutch (inoculated)	90% Germination

Weed seed shall not exceed 0.5% by weight.

Seed shall be furnished in standard containers on which the following shall be shown:

1. Common name of seed
2. Net weight
3. Percent of purity
4. Percentage of germination
5. Percentage of weed seed and inert material

5.4-3.1 continued

Required seed not spread by the termination of this contract shall become property of the State.

Road	Stations	Seed Quantity (lbs)
E-2100	7+75 to 25+00	35
E-2100 Reroute	0+00 to 10+70	40
E-2100 Ext.	0+00 to 13+73	55
E-2100 Abandonment	0+00 to 7+75	35
Spur 1	0+00 to 18+46	75
Spur 1A	0+00 to 1+90	5
Spur 1B	0+00 to 4+87	20
Spur 1C	0+00 to 11+97	50
Spur 1Z	0+00 to 1+10	5
Spur 2A	0+00 to 4+37	20
Spur 2B	0+00 to 4+56	20
Spur 3A	0+00 to 7+59	30
Spur 3B	0+00 to 1+33	5
Spur 3C	0+00 to 1+58	5
Spur 3D	0+00 to 1+68	5
Spur 3E	0+00 to 6+36	25

5.5-4

Constructed or reconstructed subgrades shall be compacted full width except ditch prior to rock application. Compaction shall be by a smooth-drum vibratory roller weighing at least 14,000 pounds. Four complete passes shall be made at a maximum operating speed of 3 mph.

5.5-5

Finished subgrade shall be crowned as shown on the TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

5.5-6

On the following roads, a grader shall be used to shape the existing surface and the surface shall be compacted full width except ditch. Compaction shall be by smooth-drum vibratory roller weighing at least 14,000 pounds. Four complete passes shall be made at a maximum operating speed of 3 mph.

Road	Stations
E-2004	0+00 to 8+30
E-2100	7+75 to 25+00
E-2300	0+00 to 11+70

SECTION 6 - DRAINAGE

6.2.1-1

Purchaser shall furnish, install, and maintain corrugated polyethylene pipe (AASHTO specification No. M-294 Type S) as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.1-1.1

On the following road, Purchaser shall install and maintain culverts of the length and diameter specified on the CULVERT LIST. Culverts may be new or used steel, cast iron, plastic, concrete, or such other material as approved by the Contract Administrator.

Road	Stations
Spur 3B	0+00 to 1+33

6.2.1-2

Annular corrugated bands and culvert ends shall be used on metal culverts. Bands shall have a minimum width of 12 inches. Manufacturer's approved connectors shall be used for corrugated polyethylene pipe.

6.2.1-5

On required roads: culverts, downspouts, flumes, bands, and gaskets as listed on the CULVERT LIST which are not installed shall become property of the State.

6.2.2.1-1

Culvert, downspout, flume, and energy dissipator installation shall be in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL and the Corrugated Polyethylene Pipe Association "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings."

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline , except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed concurrently with construction of the subgrade. Ditches shall drain to culverts, ditchouts, and natural drainages.

6.3-2

On the following roads, reshaping and cleaning the ditchline, culvert headwalls, and catch basins and outlets shall be completed prior to timber haul and shall be done in accordance with the TYPICAL SECTION SHEET and CULVERT AND DRAINAGE SPECIFICATION DETAIL.

Road	Stations
E-2100	10+70 to 25+00

6.4-1

Catch basins shall be constructed to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1

Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts except for temporary culverts.

SECTION 7 - ROCK

7.1-1

Rock for construction and/or reconstruction under this contract may be obtained from a source on State land as listed below at no charge to the Purchaser. Development and use shall be in accordance with a written "Development Plan" prepared by the State. A copy of the written plan is available upon request from the Pacific Cascade Region office. Upon completion of operations, the rock source shall be left in the condition specified in said plan, subject to approval by the Contract Administrator. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using or desire to use this rock source, a joint operating plan shall be developed. All parties shall follow this plan.

Source	Location
Vantage Quarry	SW ¼, NW ¼, Sec. 22, T 16 N, R 04 W

7.1-4

Rock for reconstruction of roads under this contract may be obtained from an existing stockpile on State land as listed below at no charge to the Purchaser. Purchaser shall remove no more than 364 cubic yards of 1½ INCH MINUS CRUSHED rock.

Source	Location
Vantage Quarry Stockpile	SW ¼, NW ¼, Sec. 22, T 16 N, R 04 W

7.2.1-4

3 INCH MINUS CRUSHED rock shall meet the following specifications for gradation and quality. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

7.2.1.1-6

3 INCH MINUS CRUSHED ROCK

% passing 3" square sieve	100%
% passing 2" square sieve	65 - 95%
% passing ¾" square sieve	28 - 70%
% passing ¼" square sieve	10 - 35%
% passing U.S. #200 sieve	0 - 10%

All percentages are by weight.

7.2.1.1-10

8 INCH PLUS ROCK

% equal to, or larger in one dimension than the specified size	100%
% passing U.S. #40 sieve	16% Max.
% passing U.S. #200 sieve	5% Max.

All percentages are by weight.

7.2.1.1-12

Landing rock shall be no coarser than 6 INCH MINUS.

7.2.3-1

Measurement of the 1½ INCH MINUS and 8 INCH PLUS rock shall be on a cubic yard truck measure basis. Each truck box shall be measured by the Contract Administrator prior to rock hauling. The Contract Administrator shall periodically require that a load be flattened off and its volume calculated. An average of such volumes for each truck shall be used to tally the volume to be hauled. The Purchaser shall provide and maintain load tally sheets for each truck and shall give them to the Contract Administrator upon request.

7.2.3-2

Measurement of the 3 INCH MINUS CRUSHED rock shall be accomplished with certified belt scales or State certified platform scales provided by the Purchaser.

7.2.3-6

Belt scales shall meet the following specifications:

a. The belt conveyor scale shall meet the design, marking, installation, and tolerance requirements of Section 1-09.2(4) of the Washington State Department of Transportation Standard 2002 Specifications except where this contract modifies those requirements.

b. To test the accuracy of the belt scale, a minimum of two loaded haul trucks must be weighed on a certified platform scale. This weight shall be compared with the belts scales weight. The compared weight shall not vary more than 0.5%. The Purchaser shall check the scales accuracy using this method after every 7,000 cubic yards crosses the belt, or when directed by the Contract Administrator.

c. Under observation of the Contract Administrator, the Purchaser shall run a daily zero load test in accordance with the National Bureau of Standards Handbook No. 44. The contractor shall not be required to perform a daily static load test or a chain test.

7.2.3-6 continued

d. The weighing mechanism shall contain a weight totalizer and a self printing ticket imprinter. The totalizer calibration adjustment and ticket imprinter shall be furnished with a hasp to accept a State padlock. A ticket for each truck shall be made and delivered to the Contract Administrator upon request.

7.2.3-7

State certified platform scales shall meet the following specifications:

a. The scales shall have an enclosed weatherproof room around the reading device.

b. The weighing mechanism shall contain a weight totalizer and ticket imprinter. A ticket for each truck shall be made and delivered to the Contract Administrator.

c. The totalizer calibration adjustment and ticket imprinter shall be furnished with a hasp to accept a State padlock.

7.2.3-8

At the commencement of operations, a weight per cubic yard shall be calculated as follows:

a. The box of a truck to be used for rock haul shall be measured.

b. A load of rock shall be flattened off in the truck and its exact volume in cubic yards calculated.

c. Trucks shall be weighed for tare and gross weight at a State certified platform scale.

d. The net weight of the load shall be divided by the volume calculated in Step b.

Conversion factors thus calculated shall be valid for no more than 30 days or until rock density or moisture changes significantly, as determined by the Contract Administrator.

7.4.2-1

Apply at least the minimum required rock quantity as shown on the ROCK LIST. Required and optional rock shall meet the specifications on the ROCK LIST.

7.4.2-4

On the following roads, if hauling shall take place only from May 1 to September 30, Purchaser may not be required to place or provide the optional rock in the ROCK LIST. Purchaser shall then be required to submit a written plan for approval by the Contract Administrator describing how these roads shall be constructed, used, and abandoned in compliance with all other clauses in the ROAD PLAN.

Road	Stations
E-2004	0+00 to 8+30
E-2100 Ext.	0+00 to 13+73
E-2300	0+00 to 11+70
Spur 1	0+00 to 18+46
Spur 1A	0+00 to 1+90
Spur 1B	0+00 to 4+87
Spur 1C	0+00 to 11+97
Spur 2A	0+00 to 4+37
Spur 2B	0+00 to 4+56
Spur 3A	0+00 to 7+59
Spur 3E	0+00 to 6+36

7.4.2-9

Turnarounds, turnouts, and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-10

Each lift of rock shall be crowned as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.3-1

Water shall be added to rock in quantities to facilitate compaction. If directed by the Contract Administrator, a minimum of 6 gallons of water per cubic yard of rock shall be applied.

7.4.3-2

Rock shall be spread and compacted full width in lifts not to exceed 12 inches uncompacted depth. Compaction shall be by pneumatic-tired or steel-wheeled smooth drum vibratory roller weighing at least 14,000 pounds. Four complete passes at a maximum speed of 3 mph shall be made on each lift.

SECTION 9 - ROAD AND LANDING DEACTIVATION

9.2-1

Purchaser shall reduce or relocate landing debris, in a manner approved, in writing, by the Contract Administrator, to avoid landing failures and potential debris slides.

9.2-2

Purchaser shall provide for drainage of the landing surface as approved, in writing, by the Contract Administrator.

9.2-3

Landing embankments shall be sloped to original construction specifications.

SECTION 10 - ROAD AND LANDING ABANDONMENT

10.1-1

The following roads shall be abandoned by the Purchaser at the termination of use.

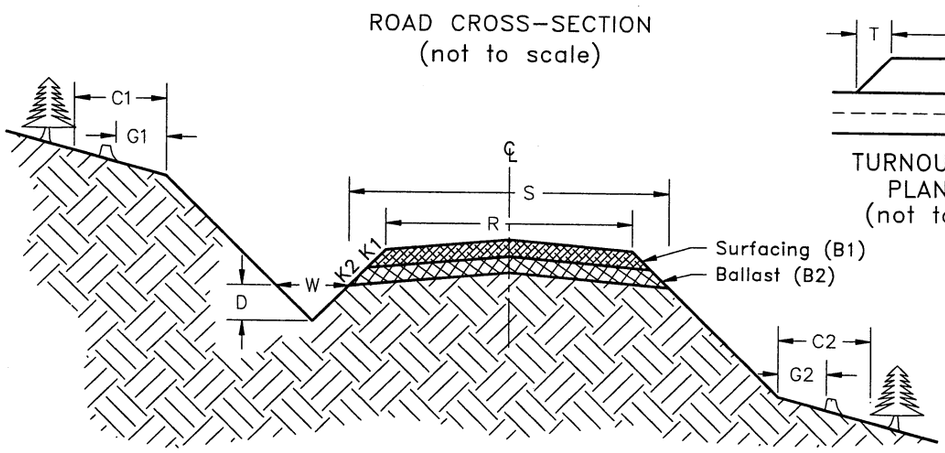
Road	Stations	Type
E-2100	0+00 to 7+75	Light
Spur 1Z	0+00 to 1+10	Light
Spur 3B	0+00 to 1+33	Light
Spur 3C	0+00 to 1+58	Light
Spur 3D	0+00 to 1+68	Light

10.1-2

Light Abandonment shall consist of:

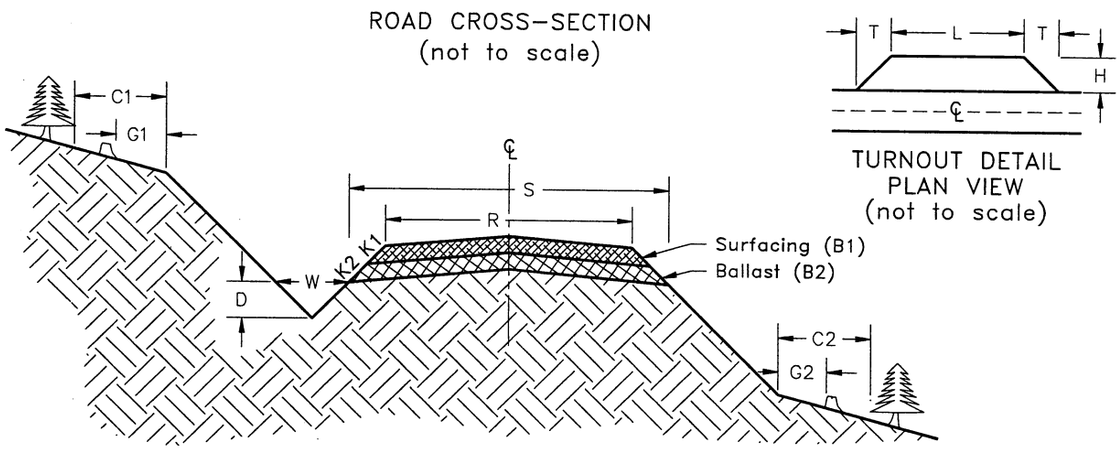
ripping the road surface to a minimum depth of 10 inches;
constructing non-drivable water bars in conformance with the attached NON-DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet; or as marked in the field;
skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;
keying water bars into ditchline;
construction of tank trap barriers in conformance with the attached "T" TANK TRAP DETAIL;
removing culverts from State Land;
removing ditch cross drain culverts and leaving the resulting trench open;
removing culvert from station 5+75 on the E-2100;
sloping all trench walls and approach embankments no steeper than 1.5:1;
grass seeding concurrently with abandonment and in accordance with Clause: 5.4-3.1;

TYPICAL SECTION SHEET



Road Number	From Station	To Station	Tolerance Class	Subgrade Width	Road Width	Ditch Width	Ditch Depth	Crown in. @ CL	Grubbing Limits		Clearing Limits	
				S	R	W	D		G1	G2	C1	C2
E-2004	0+00	8+30	C	14'	12'	-	-	4"	5'	5'	10'	10'
E-2100	7+75	25+00	C	-	14'	3'	1'	4"	-	-	10'	10'
E-2100 Ext.	0+00	13+73	C	14'	12'	3'	1'	4"	5'	5'	10'	10'
E-2100 Reroute	0+00	10+70	C	18'	14'	3'	1'	4"	5'	5'	10'	10'
E-2300	0+00	11+70	C	14'	14'	-	-	4"	-	-	-	-
Spur 1	0+00	18+46	C	14'	12'	3'	1'	4"	3'	3'	5'	5'
Spur 1A	0+00	1+90	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 1B	0+00	4+87	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 1C	0+00	11+97	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 1Z	0+00	1+10	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 2A	0+00	4+37	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 2B	0+00	4+56	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 3A	0+00	7+59	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 3B	0+00	1+33	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 3C	0+00	1+58	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 3D	0+00	1+68	C	12'	10'	2'	1'	4"	3'	3'	5'	5'
Spur 3E	0+00	6+36	C	12'	10'	2'	1'	4"	3'	3'	5'	5'

ROCK LIST
(Page 1 of 2)



BALLAST

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout Length	Turnout Width	Turnout Taper
			K2	B2					L	H	T
					3 INCH MINUS CRUSHED			Vantage Quarry			
*E-2004	0+00	8+30	1 ½:1	8"	40	8.30	332				
E-2100	Culvert backfill		-	-	-	-	40				
*E-2100 Ext.	0+00	13+73	1 ½:1	8"	40	13.73	549				
*	Landing (2)		-	-	-	-	100				
E-2100 Reroute	0+00	10+70	1 ½:1	10"	66	10.70	706				
*E-2300	0+00	11+70	1 ½:1	8"	40	11.70	468				
*Spur 1	0+00	18+46	1 ½:1	8"	40	18.46	738				
*	Landings (2)		-	-	-	-	100				
*Spur 1A	0+00	1+90	1 ½:1	8"	34	1.90	65				
*	Landing (1)		-	-	-	-	50				
*Spur 1B	0+00	4+87	1 ½:1	8"	34	4.87	166				
*	Landing (1)		-	-	-	-	50				
*Spur 1C	0+00	11+97	1 ½:1	8"	34	11.97	407				
*	Landing (1)		-	-	-	-	50				
Spur 1Z	0+00	1+10	1 ½:1	8"	34	1.10	37				
	Landing (1)		-	-	-	-	50				
*Spur 2A	0+00	4+37	1 ½:1	8"	34	4.37	149				
*	Landing (1)		-	-	-	-	50				
*Spur 2B	0+00	4+56	1 ½:1	8"	34	4.56	155				
*	Landing (1)		-	-	-	-	50				
*Spur 3A	0+00	7+59	1 ½:1	8"	34	7.59	258				
*	Landing (1)		-	-	-	-	50				
Spur 3B	0+00	1+33	1 ½:1	8"	34	1.33	45				
	Landing (1)		-	-	-	-	50				
Spur 3C	0+00	1+58	1 ½:1	8"	34	1.58	54				
	Landing (1)		-	-	-	-	50				
Spur 3D	0+00	1+68	1 ½:1	8"	34	1.68	57				
	Landing (1)		-	-	-	-	50				
*Spur 3E	0+00	6+36	1 ½:1	8"	34	6.36	216				
*	Landing (1)		-	-	-	-	50				
					8 INCH PLUS			Vantage Quarry			
E-2100	Culverts		-	-	-	-	2				
E-2100 Ext.	Culvert		-	-	-	-	1				
Spur 1	Culvert		-	-	-	-	1				
Spur 3B	Culvert		-	-	-	-	1				

* Optional rock: See clause 7.4.2-4.

OPTIONAL 3 INCH MINUS CRUSHED TOTAL 4053 Cubic Yards
REQUIRED 3 INCH MINUS CRUSHED TOTAL 1139 Cubic Yards
8 INCH PLUS TOTAL 5 Cubic Yards

ROCK LIST
(Page 2 of 2)

SURFACE

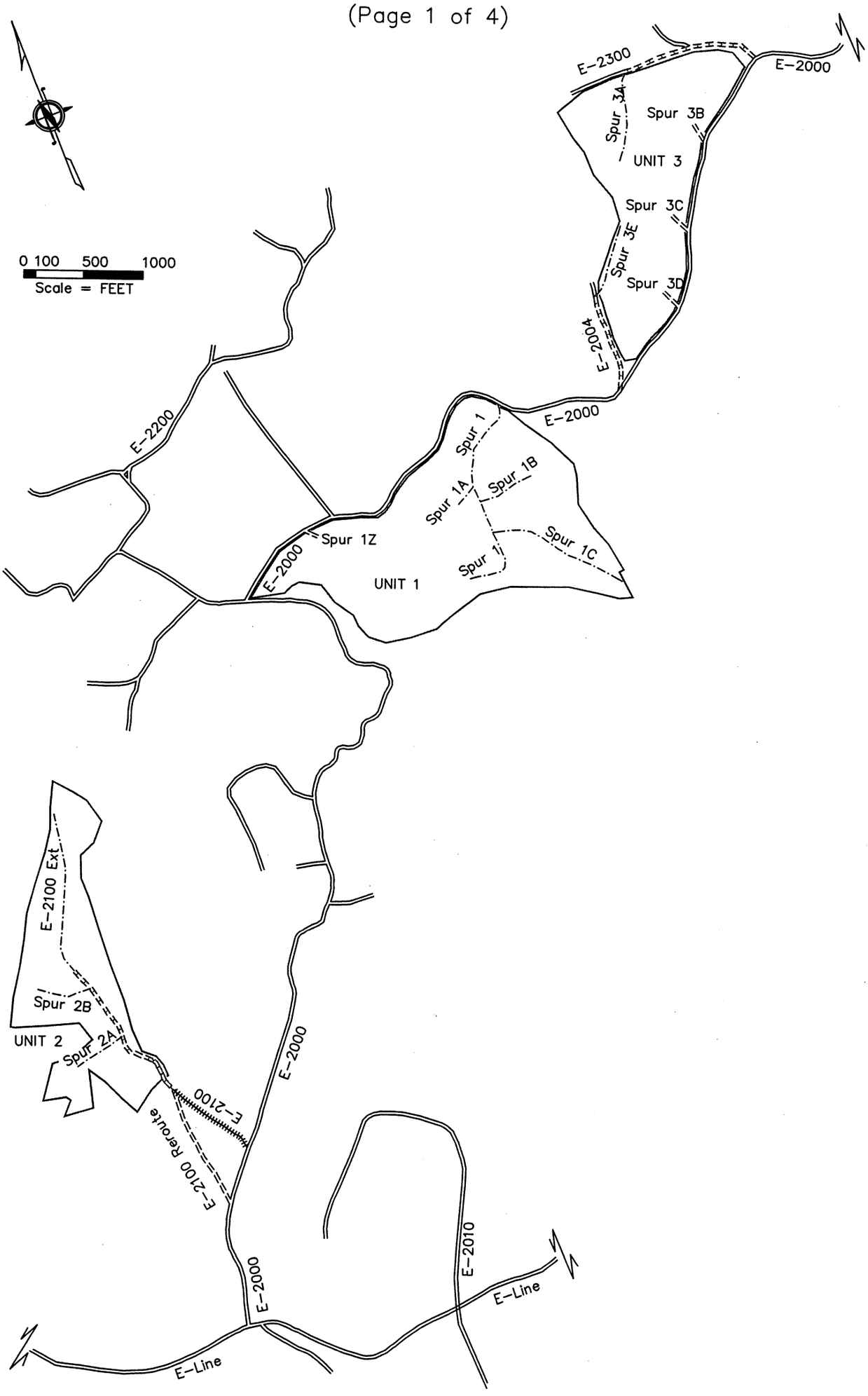
Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Total	Rock Source
			K1	B1	1 ½ Inch Minus Crushed			
E-2100 Reroute	0+00	10+70	1 ½:1	6"	34	10.70	364	Vantage Quarry Stockpile

1 ½ Inch Minus Crushed TOTAL 364 Cubic Yards

POLYESTER PLAID

ROAD PLAN OVERVIEW MAP

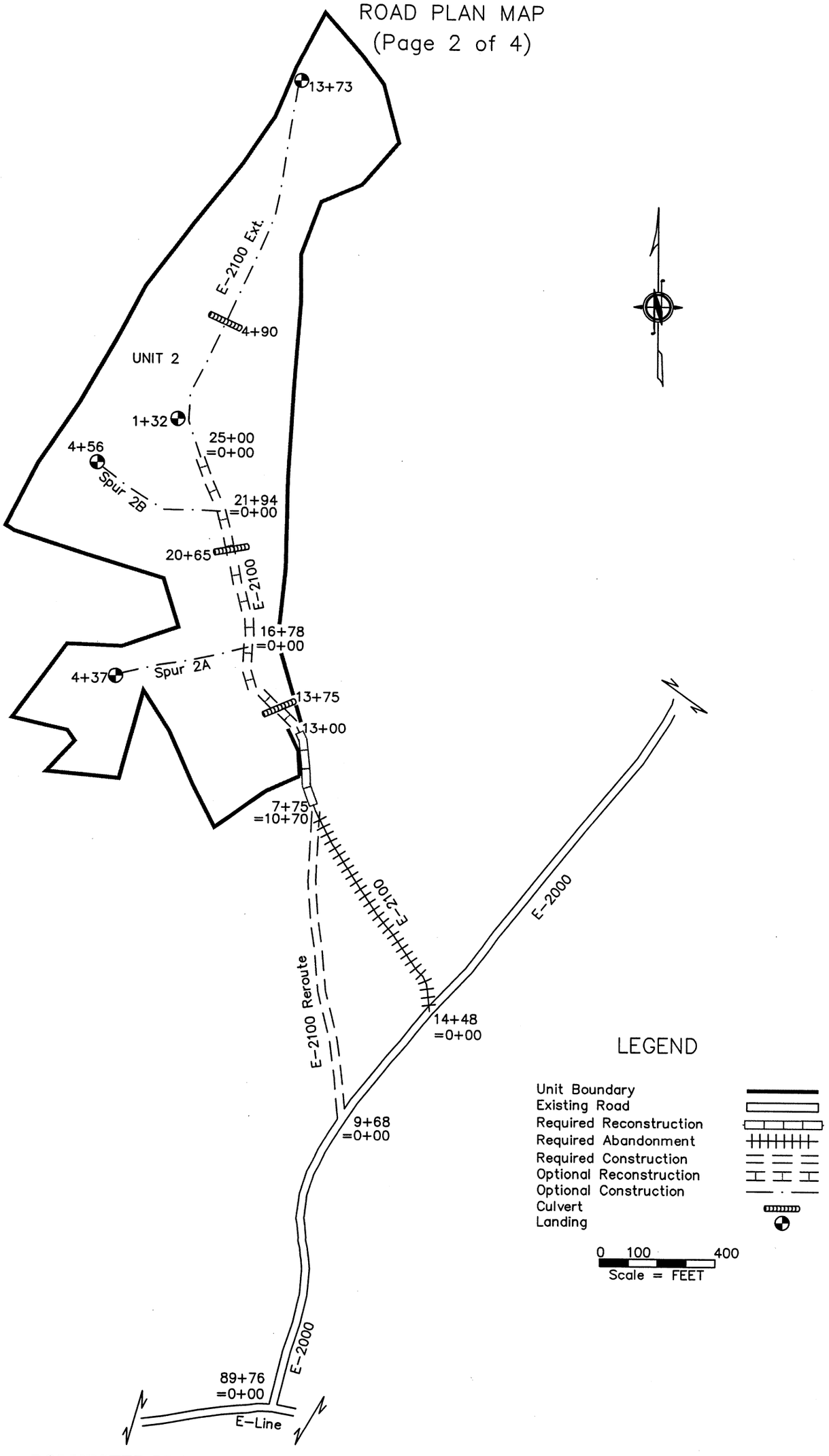
(Page 1 of 4)



POLYESTER PLAID

ROAD PLAN MAP

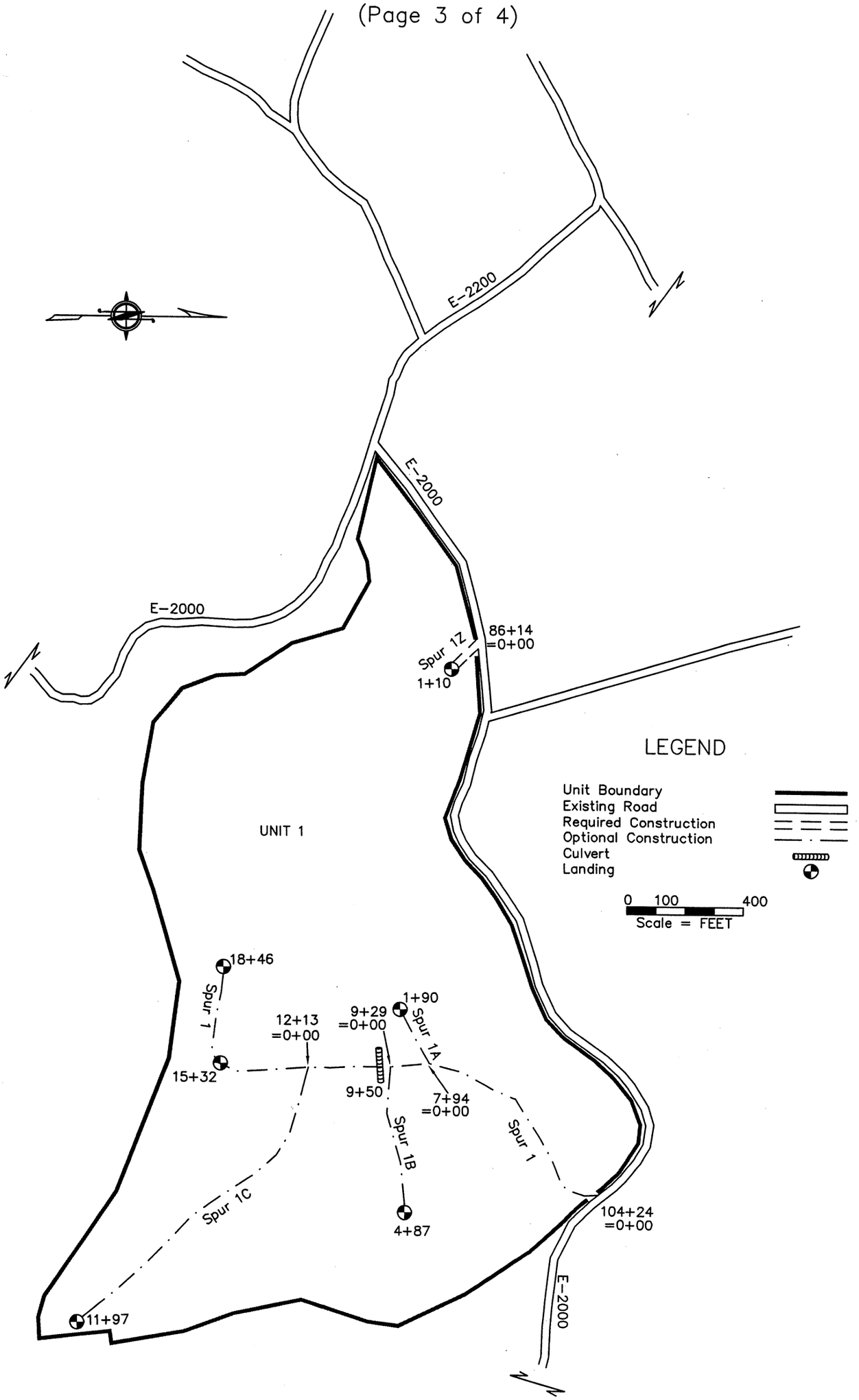
(Page 2 of 4)



POLYESTER PLAID

ROAD PLAN MAP

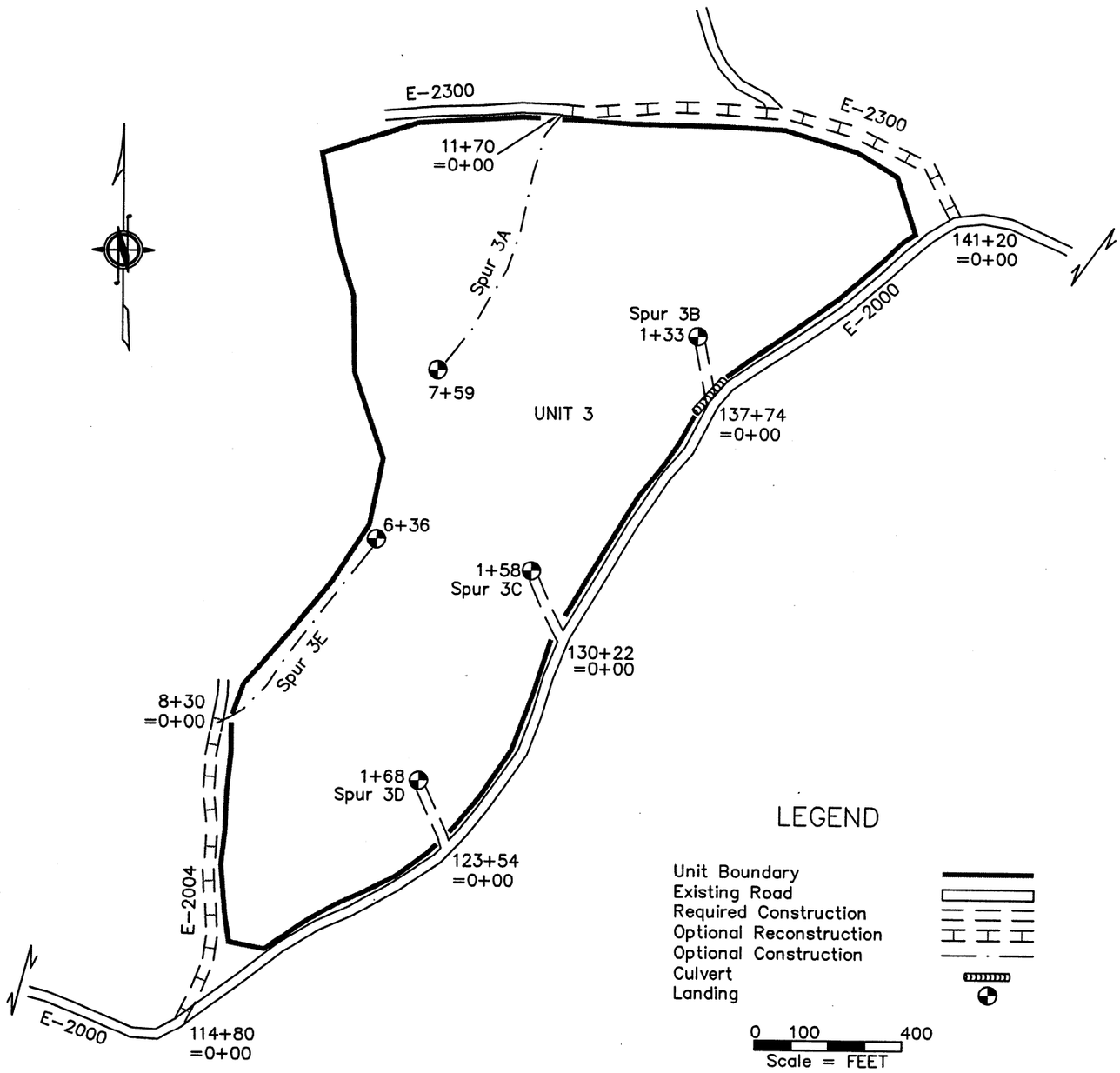
(Page 3 of 4)



POLYESTER PLAID

ROAD PLAN MAP

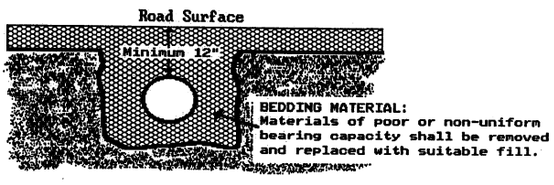
(Page 4 of 4)



CULVERT LIST

Road Number	Location	Culvert Dia.	Culvert Gauge	Length (ft) Culvert	Downspt	Flume	Riprap (C.Y.) Inlet	Outlet	Type	Backfill Material	Quantity c.y.	Const. Staked	Remarks
			If Steel										
E-2100	13+75	18"	-	30	-	-	½	½	8"+	3"-	20	-	
	20+65	18"	-	30	-	-	½	½	8"+	3"-	20	-	
E-2100 Ext.	4+90	18"	-	30	-	-	½	½	8"+	NT	-	-	
Spur 1	9+50	18"	-	30	-	-	½	½	8"+	NT	-	-	
Spur 3B	0+00	18"	-	32	-	-	½	½	8"+	NT	-	-	

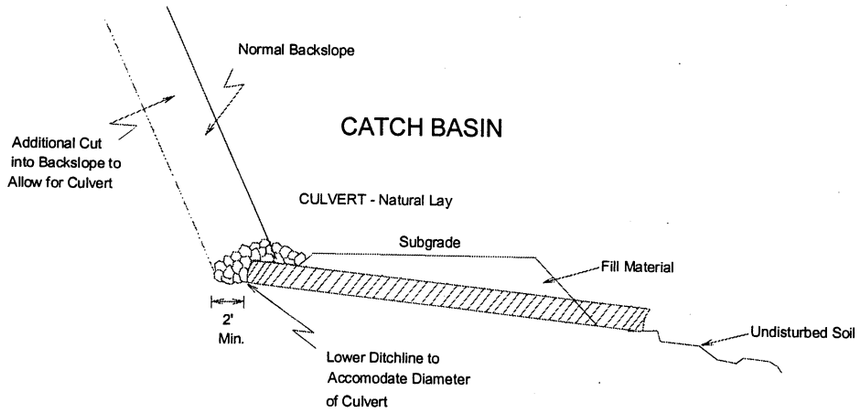
CULVERT BACKFILL AND BASE PREPARATION
(For culverts less than 36")

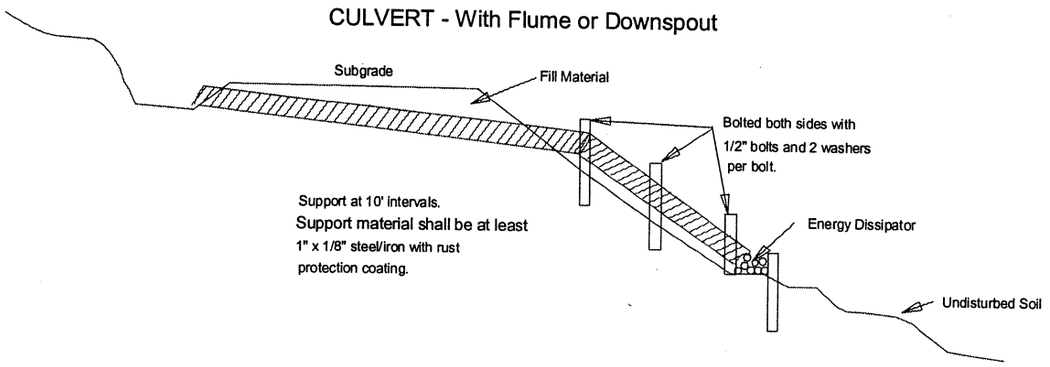


Key:

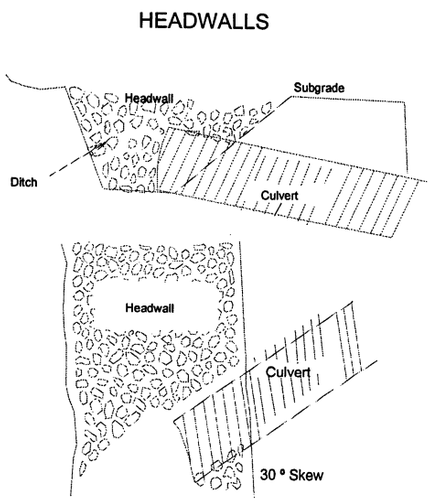
8"+ - 8 Inch Plus Rock
3"- - 3 Inch Minus Rock
NT - Native (bank run)
SL - Select Fill
HL - Heavy Loose Riprap
LL - Light Loose Riprap
Flume - Half round pipe
Downspout - Full round pipe

CULVERT AND DRAINAGE SPECIFICATION DETAIL

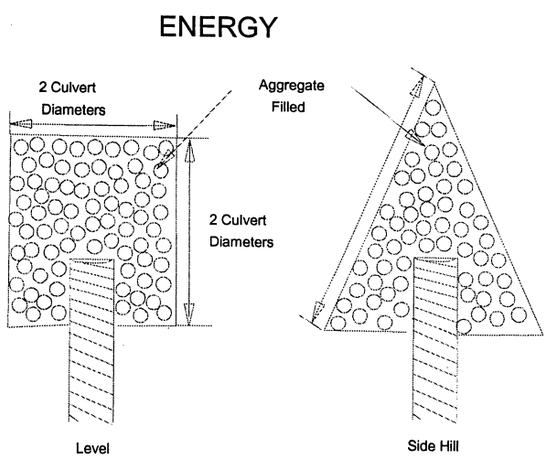




Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.



Dissipator Specifications:
Depth: 1 culvert diameter
Aggregate: as specified in the CULVERT LIST.

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

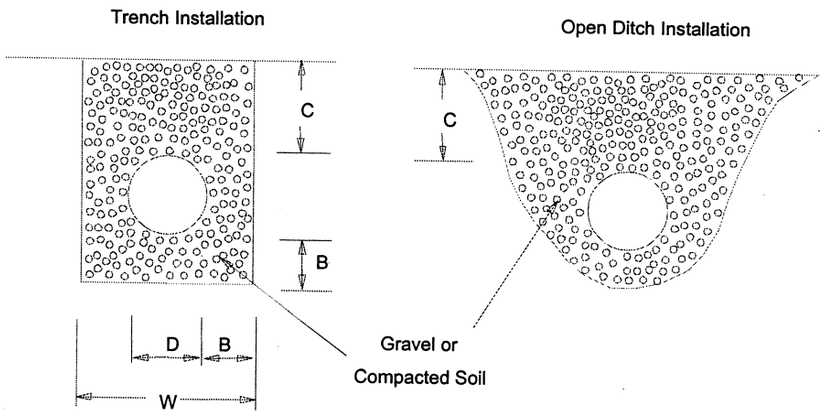
1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.

2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.

3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.

4. Site conditions and availability of bedding materials often dictate the type of installation method used.

5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



MINIMUM DIMENSIONS
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

FOREST ACCESS ROAD
MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION AND RECONSTRUCTION (Prior to acceptance to the contract or acceptance on a timber sale).

A. Cuts and Fills
   1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 ½:1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
   2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
   3. Undesirable slide materials and debris shall not be mixed into the surface material.

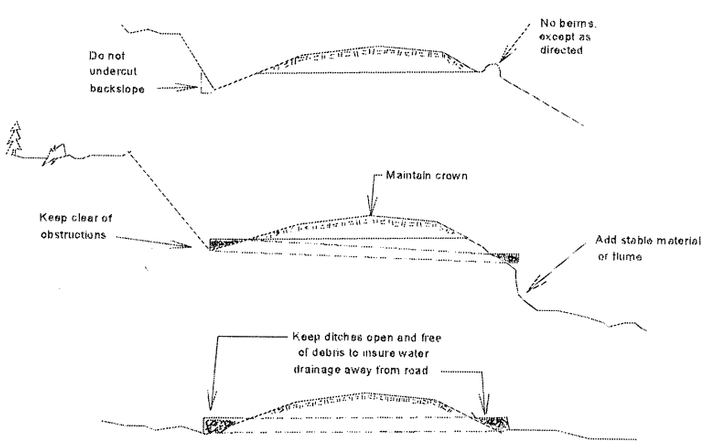
B. Surface
   1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
   2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
   3. Watering may be required to control dust and to retain fine surface rock.
   4. Desirable surface material shall not be bladed off the roadway.
   5. Replace surface material lost or worn away.
   6. Remove berms except as directed by the State.
   7. Barrel spread soft spots to prevent degradation of geotextile.

C. Drainage
   1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
   2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
   3. Add stable material at the outlet end of the culvert as needed to stabilize the stream bed.
   4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
   5. Keep silt bearing surface runoff from getting into live streams.

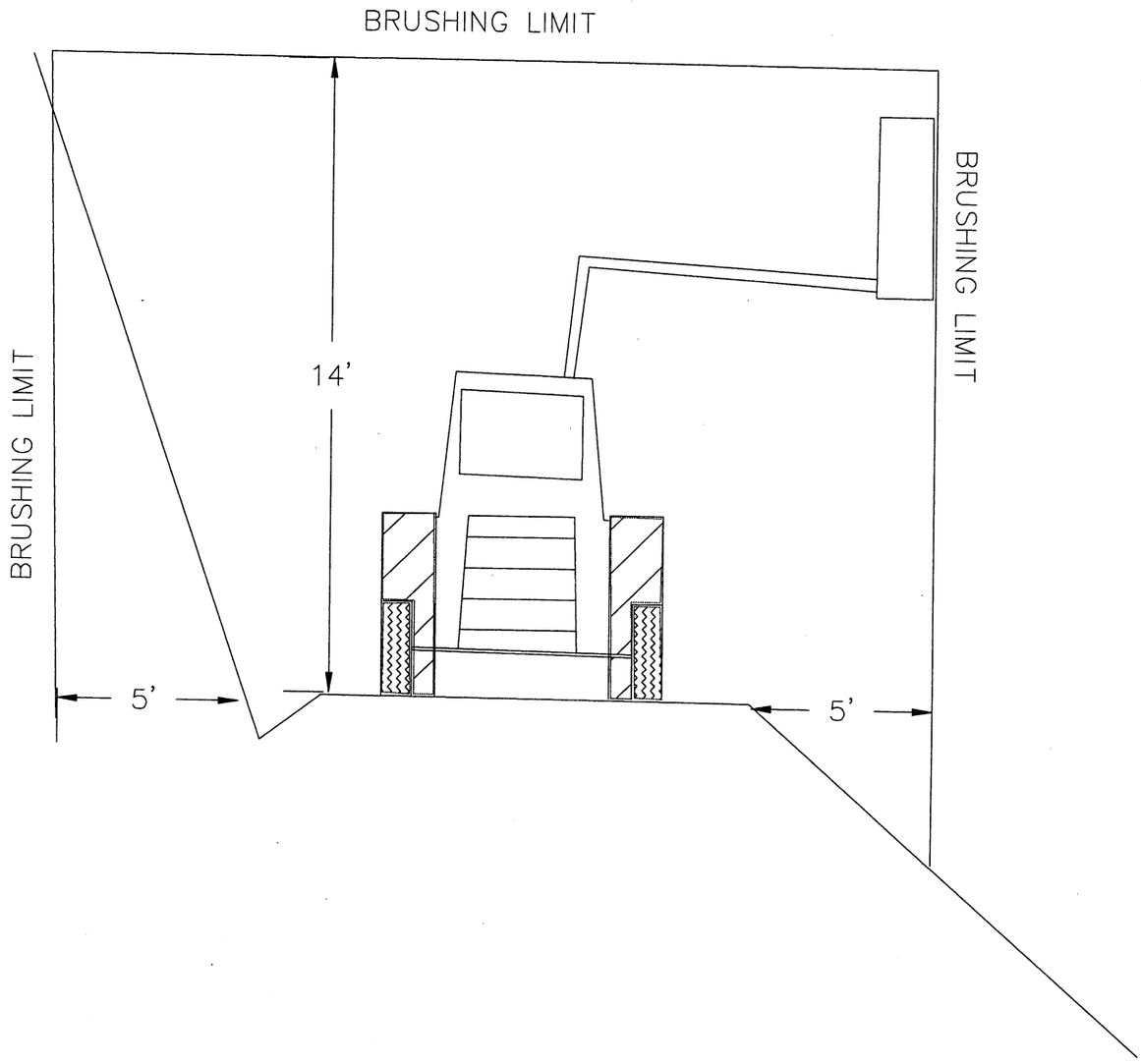
D. Structures
   Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.

E. Termination of Use or End of Season
   Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.

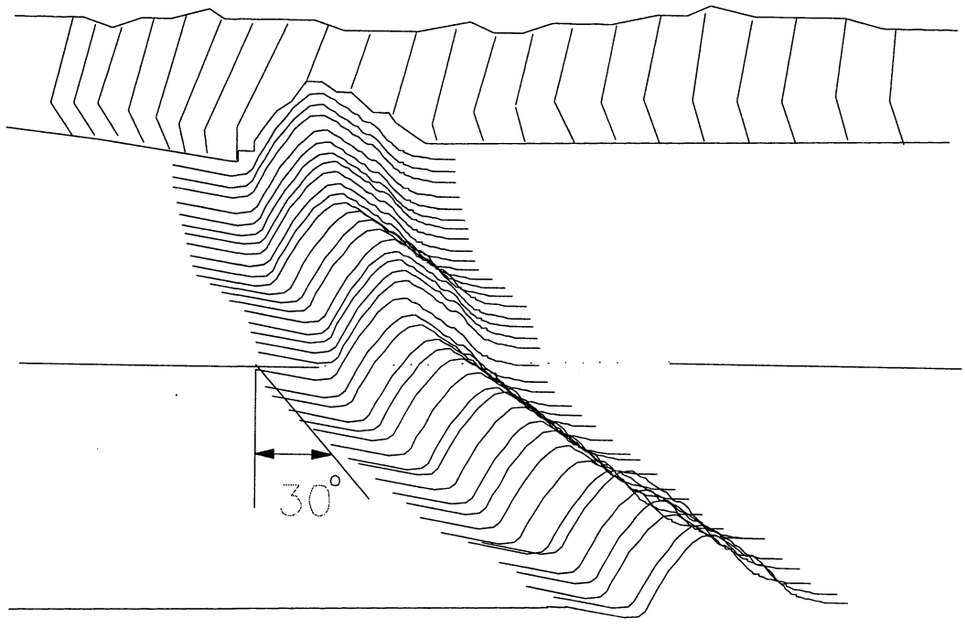
F. Debris
   Remove fallen timber, limbs, and stumps from the slopes or roadway.

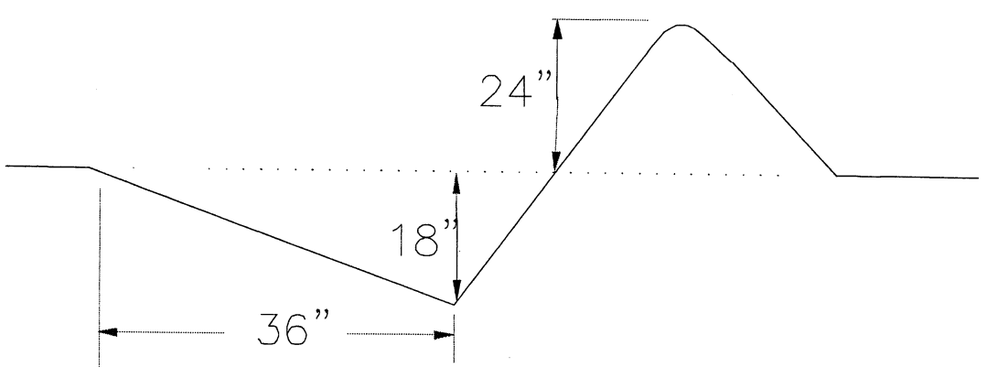


BRUSHING SECTION DETAIL

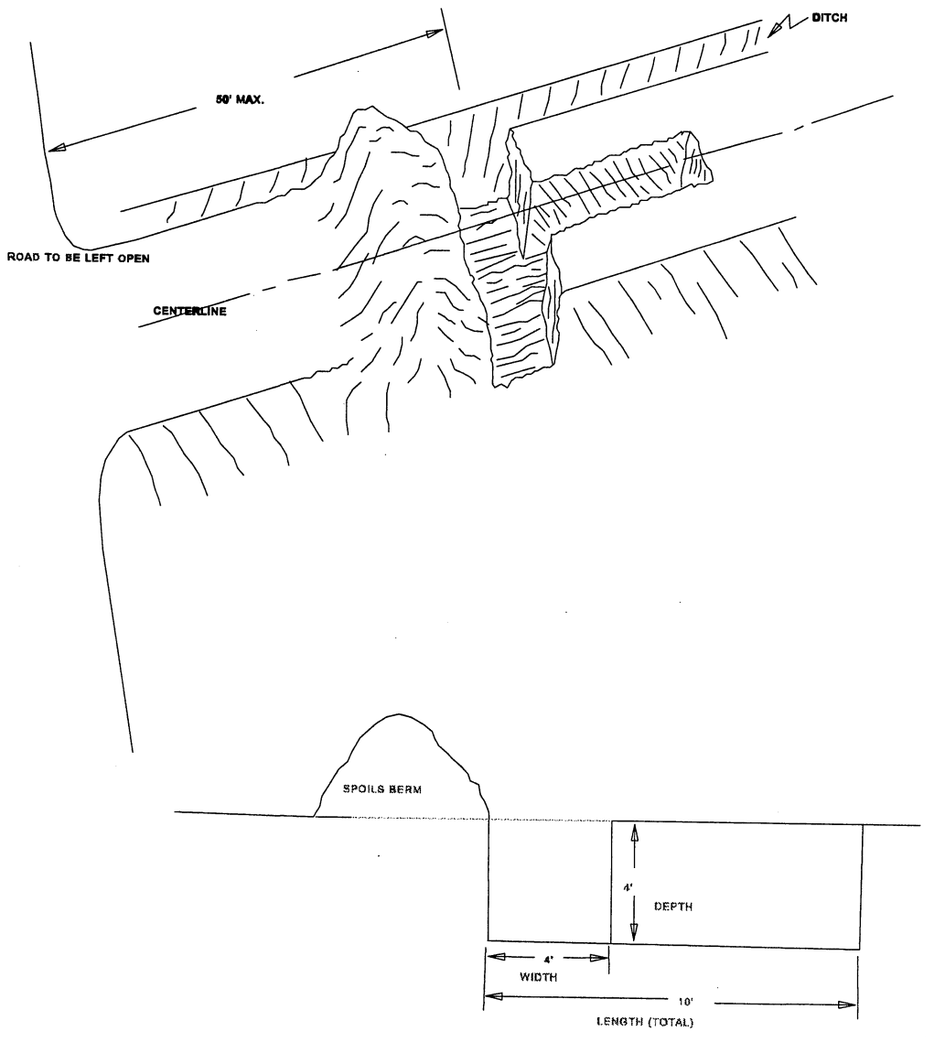


NON-DRIVABLE WATER BAR DETAIL





"T" TANK TRAP DETAIL



DEPARTMENT OF NATURAL RESOURCES - PACIFIC CASCADE REGION

FORM 9-87(Rev. 12-02)

SUMMARY - Road Development Costs

DISTRICT: Black Hills

SALE/PROJECT NAME: Polyester Plaid CONTRACT NUMBER: 30-076379

LEGAL DESCRIPTION: SECTION 9, 16, 17, 18, & 20, TOWNSHIP 16 NORTH, RANGE 04 WEST, W.M.

ROAD NUMBER:	E-2100, E-2100 R/R, E-2300	E-2004, E-2100 Ext., Spur 1	Spur 1A, Spur 1B, Spur 1C, Spur 1Z, Spur 2A, Spur 2B, Spur 3A, Spur 3B, Spur 3C, Spur 3D, Spur 3E
ROAD STANDARD:	Mainline (14' R.S.)	Secondary Mainline (12' R.S.)	Spur road (10' R.S.)
NUMBER OF STATIONS:	39.65	40.49	47.31
SIDESLOPE:	5%	10-20%	5-10%
CLEARING AND GRUBBING:	$2,779	$3,589	$2,422
EXCAVATION AND FILL:	$4,171	$4,061	$3,122
ROCK TOTALS (Cu. Yds.):			
Ballast: 5192	$12,686	$19,009	$22,562
Surface: 364	$1,984	$0	$0
Riprap: 5	$10	$10	$5
CULVERTS AND FLUMES:	$374	$374	$388
STRUCTURES:	$0	$0	$0
GENERAL EXPENSES:	$1,980	$2,434	$2,565
MOBILIZATION:	$1,350	$1,350	$1,350
TOTAL COSTS:	$25,335	$30,826	$32,414
COST PER STATION:	$639	$761	$685

NOTE: This appraisal has no allowance for profit and risk.

TOTAL (All Roads) = $88,575

SALE VOLUME MBF = 7,000

TOTAL COST PER MBF = $12.65

Plans to be furnished by:

Plan only: STATE

Plan-profile:

Compiled by: M. Miskovic Date: 04/27/04

Checked by: _____ Date: _____

Region Engineer: _____ Date: _____

Div of Engr.: _____ Date: _____

REMARKS: _____

_____

PACIFIC CASCADE REGION - ROAD COST ESTIMATE

SALE NAME: Polyester Plaid

CONTRACT NUMBER: 30-076379

I. CLEARING AND GRUBBING:

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
E-2100, E-2100 R/R, E-2300	5%	35	1.00	2.00	$40	1.20	28.95	$2,779
	*additional stations - no C&G						10.70	$0

Clear and Grub TOTAL = $2,779

II. EXCAVATION:

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
E-2100, E-2100 R/R, E-2300	5%	1.00	2.00	$88	1.00	23.70	$4,171
	*additional stations - no exc.			$0		15.95	$0

*End Haul, Over Haul, Large Fills/Cuts

	Estimated Vol. (cy)	No. of Equip. Days	Cost/day	Sub Total
End Haul/ Over Haul				$0
Large Fills/ Cuts				$0

Excavation TOTAL = $4,171

III. BALLAST AND SURFACING :

Ballast source: Vantage Quarry
Surface source: Vantage Quarry Stockpile
Riprap source : Vantage Quarry

Description	cu.yds/sta x stations =	cubic yards
Ballast (3"-)		1,214
Surfacing (1 1/2"-)		364
Riprap (8"+)		2

UNIT COSTS	Ballast	Surfacing	Riprap
Drill & Shoot	$2.50		
Dig and load	$1.00	$1.00	$1.00
Crushing	$2.50		
Purchase			
Haul *	$3.20	$3.20	$3.20
Spread	$0.80	$0.80	$0.80
Compact	$0.45	$0.45	
Strip			
Reclamation			
TOTAL ($/cy)	$10.45	$5.45	$5.00

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

R.T. Miles =	10.0
Ave. Speed =	25
Delay (Hrs.)=	0.2
Cost / Hour =	$64.00
CY / Load =	12

Ballast (3"-)	1214	Cu. yds @	$10.45 /cu. yd =	$12,686
Surfacing (1 1/2	364	Cu. yds @	$5.45 /cu. yd =	$1,984
Riprap (8"+)	2	Cu. yds @	$5.00 /cu. yd =	$10

Rock total = $14,680

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter	No/Length	Installed Cost/ft	Sub-total
	2	N/A	18	30	$11.80	$354
Bands & Gaskets	2	---	18	---	$9.90	$20

Culvert total = $374

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					$0

Structure total = $0

Sub-TOTAL = $22,004

VI. GENERAL EXPENSES: Overhead & General Exp. Add 9% $1,980

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	100	5	$500
Grader	400	1	$400
Compactor	400	1	$400
Excavator	450	1	$450
Dozer D8)	400	1	$400
Front end loader	400	1	$400
Rock crusher	$1,500	1	$1,500
Dozer (D5)	$240	0	$0

Total Mobilization = $4,050 Mobilization sub-total = $1,350

Road No. E-2100, E-2100 R/R, E-2300
Standard: Mainline (14' R.S.)
Stations: 39.65

SHEET TOTAL = $25,335

By: M. Miskovic

Date: 04/27/04

PACIFIC CASCADE REGION - ROAD COST ESTIMATE

SALE NAME: Polyester Plaid

CONTRACT NUMBER: 30-076379

I. CLEARING AND GRUBBING:

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
E-2004, E-2100 Ext., Spur 1	20%	35	1.00	2.77	$32	1.00	40.49	$3,589

Clear and Grub TOTAL = $3,589

II. EXCAVATION:

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
Spur 1	20%	1.00	2.50	$88	1.00	18.46	$4,061
E-2004 & E-2100 Ext.	*Reconstruction - no exc.					22.03	$0

*End Haul, Over Haul, Large Fills/Cuts

	Estimated Vol. (cy)	No. of Equip. Days	Cost/day	Sub Total
End Haul/ Over Haul				$0
Large Fills/ Cuts				$0

Excavation TOTAL = $4,061

III. BALLAST AND SURFACING :

Ballast source: Vantage Quarry
Surface source: Vantage Quarry Stockpile
Riprap source : Vantage Quarry

Description	cu.yds/sta x stations =	cubic yards
Ballast (3"-)		1,819
Surfacing (1 1/2"-)		0
Riprap (8"+)		2

UNIT COSTS	Ballast	Surfacing	Riprap
Drill & Shoot	$2.50	$0.00	$0.00
Dig and load	$1.00	$1.00	$1.00
Crushing	$2.50	$0.00	$0.00
Purchase	$0.00	$0.00	$0.00
Haul *	$3.20	$3.20	$3.20
Spread	$0.80	$0.80	$0.80
Compact	$0.45	$0.45	$0.00
Strip			
Reclamation			
TOTAL ($/cy)	$10.45	$5.45	$5.00

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

R.T. Miles =	10.0
Ave. Speed =	25.0
Delay (Hrs.)=	0.2
Cost / Hour =	64.0
CY / Load =	12.0

Ballast (3"-)	1819	Cu. yds @	$10.45 /cu. yd =	$19,009
Surfacing (1 1/2	0	Cu. yds @	$5.45 /cu. yd =	$0
Riprap (8"+)	2	Cu. yds @	$5.00 /cu. yd =	$10

Rock total = $19,019

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	No/Length (ft)	Installed Cost/ft	Sub-total
	2	N/A	18	30	$11.80	$354
Bands & Gaskets	2	---	18	---	$9.90	$20

Culvert total = $374

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					$0

Structure total = $0

Sub-TOTAL = $27,043

VI. GENERAL EXPENSES: Overhead & General Exp. Add 9% $2,434

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	$100	5	$500
Grader	$400	1	$400
Compactor	$400	1	$400
Excavator	$450	1	$450
Dozer D8)	$400	1	$400
Front end loader	$400	1	$400
Rock crusher	$1,500	1	$1,500
Dozer (D5)	$240	0	$0

Total Mobilization = $4,050 Mobilization sub-total = $1,350

Road No. E-2004, E-2100 Ext., Spur 1
Standard: Secondary Mainline (12' R.S.)
Stations: 40.49

SHEET TOTAL = $30,826

By: M. Miskovic

Date: 04/27/04

PACIFIC CASCADE REGION - ROAD COST ESTIMATE

SALE NAME: Polyester Plaid

CONTRACT NUMBER: 30-076379

I. CLEARING AND GRUBBING:

	Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
Spur 1A, Spur 1B, Spur 1C, Spur 1Z, Spur 2A, Spur 2B, Spur 3A, Spur 3B, Spur 3C, Spur 3D, Spur 3E		5%	35	1.00	2.00	$32	0.80	47.31	$2,422

Clear and Grub TOTAL = $2,422

II. EXCAVATION:

	Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
Spur 1A, Spur 1B, Spur 1C, Spur 1Z, Spur 2A, Spur 2B, Spur 3A, Spur 3B, Spur 3C, Spur 3D, Spur 3E		5%	1.00	2.00	$66	0.50	47.31	$3,122

*End Haul, Over Haul, Large Fills/Cuts	Estimated Vol. (cy)	No. of Equip. Days	Cost/day	Sub Total
End Haul/ Over Haul				$0
Large Fills/ Cuts				$0

Excavation TOTAL = $3,122

III. BALLAST AND SURFACING :

Ballast source: Vantage Quarry
Surface source: Vantage Quarry Stockpile
Riprap source : Vantage Quarry

Description	cu.yds/sta x stations =	cubic yards
Ballast (3"-)		2,159
Surfacing (1 1/2"-)		0
Riprap (8"+)		1

UNIT COSTS	Ballast	Surfacing	Riprap
Drill & Shoot	$2.50	$0.00	$0.00
Dig and load	$1.00	$1.00	$1.00
Crushing	$2.50	$0.00	$0.00
Purchase	$0.00	$0.00	$0.00
Haul *	$3.20	$3.20	$3.20
Spread	$0.80	$0.80	$0.80
Compact	$0.45	$0.45	$0.00
Strip			
Reclamation			
TOTAL ($/cy)	$10.45	$5.45	$5.00

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

R.T. Miles =	2.0
Ave. Speed =	25
Delay (Hrs.)=	0.2
Cost / Hour =	$77.00
CY / Load =	20

Ballast (3"-)	2159	Cu. yds @	$10.45 /cu. yd =	$22,562
Surfacing (1 1/2	0	Cu. yds @	$5.45 /cu. yd =	$0
Riprap (8"+)	1	Cu. yds @	$5.00 /cu. yd =	$5

Rock total = $22,567

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	No/Length (ft)	Installed Cost/ft	Sub-total
	1	N/A	18	32	$11.80	$378
Bands & Gaskets	1	---	18	---	$9.90	$10

Culvert total = $388

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					$0

Structure total = $0

Sub-TOTAL = $28,499

VI. GENERAL EXPENSES: Overhead & General Exp. Add 9% $2,565

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	100	5	$500
Grader	400	1	$400
Compactor	400	1	$400
Excavator	450	1	$450
Dozer D8)	400	1	$400
Front end loader	400	1	$400
Rock crusher	$1,500	1	$1,500
Dozer (D5)	$240	0	$0

Total Mobilization = $4,050 Mobilization sub-total = $1,350

Road No. E-2004, E-2100 Ext., Spur 1
Standard: Spur road (10' R.S.)
Stations: 47.31

SHEET TOTAL = $32,414

By: M. Miskovic

Date: 04/27/04